EPA Region 7 TMDL Review

TMDL ID	329	*Water Body ID*	WBID 0690
Water Body Name	Dark Creek		
Pollutant	Sulfate		
Tributary			
State	MO	*HUC*	10280203040002
Basin			
Submittal Date	12/7/2004		
Approved	Yes		

Submittal Letter

State submittal letter indicates final TMDL(s) for specific pollutant(s)/ water(s) were adopted by the state, and submitted to EPA for approval under section 303(d) of the Clean Water Act.

The TMDL for Dark Creek was formally submitted by the Missouri Department of Natural Resources (MDNR) in a letter dated November 29, 2004 and received by EPA on December 7, 2004.

Water Quality Standards Attainment

The water body's loading capacity for the applicable pollutant is identified and the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources is described. TMDL and associated allocations are set at levels adequate to result in attainment of applicable water quality standards.

Sulfate and chloride criteria for the protection of aquatic life are linked in Missouri's Water Quality Standards (WQS) where it's stated the in-stream concentration will not exceed 1000 mg/L; the beneficial use is protection of aquatic life. The allocations are set to mitigate the most severely impacted site at its highest in-stream concentration. This will ensure that all sites will meet WQS for sulfate plus chloride.

Numeric Target(s)

Submittal describes applicable water quality standards, including beneficial uses, applicable numeric and/or narrative criteria. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, site specific if possible, was developed from a narrative criterion and a description of the process used to derive the target is included in the submittal.

Beneficial uses of Dark Creek are livestock and wildlife watering, protection of warm water aquatic life and protection of human health associated with fish consumption. The water quality standard to protect aquatic life is an in-stream chloride plus sulfate concentration not to exceed 1000 mg/L.

Link Between Numeric Target(s) and Pollutant(s) of concern

An explanation and analytical basis for expressing the TMDL through surrogate measures (e.g., parameters such as percent fines and turbidity for sediment impairments, or chlorophyll-a and phosphorus loadings for excess algae) is provided, if applicable. For each identified pollutant, the submittal describes analytical basis for conclusions, allocations and margin of safety that do not exceed the load capacity.

The numeric targets are the water quality criteria for sulfate plus chloride. The relationship between the numeric target and the pollutant is direct.

Source Analysis

Important assumptions made in developing the TMDL, such as assumed distribution of land use in the watershed, population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources, are described. Point, non point and background sources of pollutants of concern are described, including magnitude and location of the sources. Submittal demonstrates all significant sources have been considered.

The source of impairment is runoff from abandoned mine land. Rainfall and erosion expose these sulfide bearing soils which exposes the minerals to oxidation and results in runoff high in sulfate. The submittal demonstrates all significant sources of sulfate were identified and considered.

Allocation

Submittal identifies appropriate wasteload allocations for point, and load allocations for nonpoint sources. If no point sources are present the wasteload allocation is zero. If no nonpoint sources are present, the load allocation is zero.

The allocation is dependant on erosion and oxidation of sulfide bearing soils. The load is designated as the in-stream sulfate plus chloride criterion.

WLA Comment

There are no point source discharges. The WLA is set at zero.

LA Comment

The load allocation is linked to soil erosion which is dependant on rainfall intensity, duration, cover and moisture content. The LA is designated as an in-stream sulfate+chloride concentration of 1000mg/L.

Margin of Safety

Submittal describes explicit and/or implicit margin of safety for each pollutant. If the MOS is implicit, the conservative assumptions in the analysis for the MOS are described. If the MOS is explicit, the loadings set aside for the MOS are identified and a rationale for selecting the value for the MOS is provided.

The margin of safety is implicit in the use of conservative assumptions. The required reduction in load was based on the most impacted site and applied to all sites. Future monitoring and reevaluation of standards are also listed as an implied MOS.

Seasonal Variation and Critical Conditions

Submittal describes the method for accounting for seasonal variation and critical conditions in the TMDL(s).

The TMDL specifies that the standard applies for all seasons and the LA and TMDL are applicable at all seasons. Data used to prepare the TMDL represented all seasons.

Public Participation

Submital describes public notice and public comment opportunity, and explains how the public comments were considered in the final TMDL(s).

The TMDL was placed on public notice from October 22 – November 21, 2004. Groups receiving announcement of this posting were; Missouri Clean Water Commission, Water Quality Coordinating Committee, TMDL Policy Advisory Committee, Randolph County Soil and Water Conservation District, Stream Team volunteers (9), appropriate legislators (2) and others that routinely receive notice of Missouri State Operating Permits. Adjustments were made based on one public comment.

Monitoring Plan for TMDL(s) Under Phased Approach

The TMDL identifies the monitoring plan that describes the additional data to be collected to determine if the load reductions required by the TMDL lead to attainment of WQS, and a schedule for considering revisions to the TMDL(s) (where phased approach is used).

Dark Creek is included in MDNR's continuous monitoring plan. Four sites sampled two times per year for the appropriate parameters.

Reasonable assurance

Reasonable assurance only applies when reduction in nonpoint source loading is required to meet the prescribed waste load allocations.

There are no point source loadings in the watershed so reasonable assurance is not required. Any future point sources would be required to maintain chloride+sulfate concentrations of 1000mg/L or less.